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Transosseous Osteosynthesis
Theoretical and Clinical Aspects of the Regeneration and Growth of Tissue

Editorial Assistance by Stuart A. Green

With 656 Figures in 3100 Separate Illustrations Some in Color

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Preface

This volume deals with the transosseous external fixation techniques that I have been developing over the course of the past 40 years. During this time, our research in medicine, biology and engineering has led to the evolution of more than 800 unique, highly effective methods of treatment that extend beyond the realm of traumatology and orthopedics. The book features a comprehensive theoretical and clinical description of the biologic laws governing the dependence of the shape-forming processes of bones and joints upon the adequacy of blood supply, as well as a delineation of the effect of tension-stress upon the genesis and growth of tissues. I have included our latest data on tissue growth and regeneration during transosseous osteosyntheses.

The book summarizes the biomechanical principles of application of my apparatus; clinical cases selected from more than 25,000 patients illustrate the management of some of the most complex disorders of the locomotor system.

New solutions to many therapeutic problems are described. In particular, severe limb trauma with large defects of bone, vessels, nerves and skin can be managed without resort to transplantation. Radical debridement surgery can be followed by a one-step restoration of the missing tissue, thus decreasing the likelihood of a serious wound infection or an amputation.

Other applications described in this monograph include techniques for: aligning and lengthening limbs; increasing stature; thickening and reshaping the tibia; lengthening and shaping upper and lower limb stumps to provide, for example, fingers or a foot; elongation of the spine; normalization of the pelvis, and the treatment of benign bone tumors. Specific chapters focus on fracture management, the percutaneous and operative care of foot pathologies, hand surgery, and the treatment of diseases and disorders of the hip.

The ability to induce growth in blood vessels has been successfully exploited to treat limb circulation problems, including such severe pathology as obliterating endarteritis.

It is my sincere hope that this book will prove valuable to musculoskeletal researchers, traumatologists, orthopedic surgeons, neurosurgeons, angiologists, biomechanical engineers, and, indeed, all those interested in the genesis of bone and soft tissues.

G. A. Ilizarov
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